

CLAIMS

1. An improved diver's breathing regulator of the type having a tube connected to a source of pressurized air and having a demand valve actuated by a lever in response to inhalation by the diver, the lever withdrawing a poppet having
5 an elastic seal from a sharp edge orifice to permit the pressurized air to pass through the orifice and into the regulator and out through a mouthpiece tube, the poppet returning the elastic seal to engage the sharp edge orifice upon exhalation by the diver thereby terminating input air flow
10 through the orifice until the next breathing cycle of the diver; the improvement comprising:

a cylindrical sleeve adjustably positioned within said tube for limited axial movement therein;

a floating orifice member having said sharp edge
15 orifice at one end and having a cylindrical shape with an exterior diameter just smaller than the interior diameter of said sleeve whereby said orifice member may slide coaxially within said sleeve; and

means for limiting the travel of said orifice member
20 within said sleeve toward said elastomeric seal in response to said pressurized air.

a 2. The improvement recited in claim 1 wherein said lever is connected to said poppet at a camming hole to pull said poppet and ^{elastic}~~elastomeric~~ seal away from said sharp edge orifice upon inhalation of the diver.

4.
3. The improvement recited in claim 1 wherein said orifice member is configured to be free to float within said sleeve relative to said seal when said regulator is depressurized whereby to prevent deformation of said seal during non-use periods of said regulator.

5.
4. The improvement recited in claim 1 wherein said means for limiting comprises a shoulder on said orifice member and wherein said shoulder is configured to engage an axial end of said sleeve.

6.
5. The improvement recited in claim 1 further comprising means for adjusting the relative position of said sleeve within said tube, said adjusting means being configured to provide external accessibility through said tube.

7.
6. The improvement recited in claim 5 wherein said adjusting means comprises a threaded interior surface along at least a portion of said tube and a threaded exterior surface along at least a portion of said sleeve, and said orifice member providing a slot and a non-circular exterior perimeter whereby rotation of the orifice member by engagement with said slot causes relative movement of said threaded surfaces.

8.
7. The improvement recited in claim 1 further comprising a compression spring adjacent said poppet and tending to resist the withdrawal of said ^{elastic} elastomeric seal from said sharp edge orifice.

³/₈. The improvement recited in claim 2 wherein said lever comprises at least one leg penetrating said tube adjacent said camming hole.

9. The improvement recited in claim ⁸/₇ further comprising adjustment means for partially compressing said compression spring to a selected degree prior to withdrawal of said ^{elastic}
~~elastomeric~~ seal from said sharp edge orifice.

10. An improved second stage scuba dive regulator having a tube connected to a source of pressurized air, a valve member in the tube, the valve member having an orifice device and an elastic seal, the latter being an end surface of a poppet which is made to move the seal from the orifice device in response to diver demand for air; the improvement comprising:

a valve member having a floating orifice device for movement within said tube; said floating orifice device being responsive to said pressurized air to forcefully engage said seal until said seal is moved in response to diver demand for air and being responsive to the absence of said pressurized air to float free of said seal; and

means for adjusting the degree of engagement between said orifice device and said seal for varying the pressure reduction within said regulator required to move said seal from the orifice device.